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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Yang Gao

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EXAMINER

SERROU, ABDELALI

ART UNIT

PAPER NUMBER

2626

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/799,503	Applicant(s) GAO, YANG	
	Examiner Abdelali Serrou	Art Unit 2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-12,14-22,24-28 and 30-49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-12,14-22,24-28 and 30-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 2/27/09 has been entered.

Response to Amendment

2. In response to the office action mailed on 2/19/09, applicant filed an amendment on 2/27/09, amending claims 1, 12, 222, 28, 34, 37, 40, and 43, adding new claims 48-49. Claims 2, 13, 23, and 29 were previously cancelled. The pending claims are 1, 3-12, 14-22, 24-28, and 30-49.

Response to Arguments

3. Applicant's arguments filed 2/19/09 have been fully considered but they are not persuasive.

As per claim 1, applicant argues that the encoder of Kroon does not transmit a voicing index specifically designating one of plurality of classes of the input speech signal. Applicant states that if the received frame from the encoder, in Kroon, did include a classification index, there would be no need for the decoder of Kroon to perform classification, as described at col. 30, lines 1-18, 55-65. The examiner notes that the post filter analysis described in col. 30, lines 1-18, 55-65 corresponds to frames concealment. The examiner refers applicant to Fig. 3 of Kroon. The encoder of Fig. 3 uses both Fixed Code Book (FCB) (unvoiced) (see Fig. 3, element

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120) and Adaptive Code Book (ACB) (voiced) (See Fig. 3, element 110). Both, (FCB) and (ACB) got their corresponding gain, which indicate the strength of voiced and unvoiced parts. Therefore, classifying each of said plurality CELP speech frames into a plurality of classes, wherein each of said plurality of classes of said input speech signal represents, a different degree of periodicity of said input speech signal, and wherein said plurality of classes of said input speech signal include a background noise class, an unvoiced class, a first voiced class, a second voiced class, wherein said first voiced class has a lower degree of periodicity than said second voiced class is inherently disclosed by the encoder of Kroon.

As per the rest of the claims, and combinations of prior art reference, applicant has no further arguments beside the ones mentioned above. Therefore, all the combinations of prior art reference mentioned above are valid, and all other claims are rejected for the same reasons as set above.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-10, 12, 14-20, 22, 24-26, 28, 30-32, and 34-49 are rejected under 35 U.S.C. 102(b) as being anticipated by Kroon (USPN 5,664,055).

Regarding **claim 1**, Kroon discloses a method of improving synthesized speech quality in a speech coding system including an encoder and decoder, said method comprising:

obtaining an input speech signal by said encoder (speech signal; column 1, lines 43-64

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with column 6, lines 2-14);

coding said input speech signal by said encoder using a Code Excited Linear Prediction coder to generate coding parameters for synthesis of said input speech signal (ABC; column 4, lines 18-64);

generating a plurality CELP speech frames by said encoder, each of said plurality CELP speech frames including said CELP coding parameters (CELP; column 1, lines 43-64);

classifying each of said plurality CELP speech frames into a plurality of classes, wherein each of said plurality of classes of said input speech signal represents, a different degree of periodicity of said input speech signal, and wherein said plurality of classes of said input speech signal include a background noise class, an unvoiced class, a first voiced class, a second voiced class, wherein said first voiced class has a lower degree of periodicity than said second voiced class (inherently disclosed by the encoder of Kroon because the encoder of Fig.3 uses both Fixed Code Book (FCB) (unvoiced) (see Fig. 3, element 120) and Adaptive Code Book (ACB) (voiced) (See Fig. 3, element 110). Both, (FCB) and (ACB) got their corresponding gain, which indicate the strength of voiced and unvoiced parts);

creating a plurality voicing indexes by said encoder wherein each of said plurality of voicing indexes specifically designates one of said plurality of classes of said input speech signal (Fig. 3 and (subsections II.2.2. A-C, wherein the decoder make use of all coded parameters and indexes, including voicing indexes, provided by the encoder); and

transmitting each of said plurality of voicing indexes as part of each of said plurality of CELP speech frames and in addition to said CELP coding parameters, by said encoder to said decoder for specifically designating one of plurality of classes corresponding to each of said

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plurality of CELP speech frames, whereby enhancing said synthesis of said input speech signal (Fig. 3 and column 1, lines 43-64 with column 4, lines 49-64 and column 6, lines 2-14).

Regarding claim 12, Kroon discloses a method and encoder of improving synthesized speech quality in a speech coding system including an encoder and a decoder, said method comprising:

receiving a plurality of Code Excited Linear Prediction (CELP) speech frames by said decoder from said encoder (CELP; column 1, lines 43-64);

obtaining a plurality of CELP coding parameters by decoding each of said plurality of CELP speech frames by said decoder (decoder; column 1, lines 43-64);

obtaining a plurality of voicing indexes in addition to said CELP coding parameters by decoding each of said plurality of CELP speech frames by said decoder for obtaining classification designation of said input speech signal by the encoder, wherein each of said plurality of voicing indexes specifically designates one of plurality of classes of said input speech signal represents, a different degree of periodicity of said input speech signal, and wherein said plurality of classes of said input speech signal include a background noise class, an unvoiced class, a first voiced class, a second voiced class, wherein said first voiced class has a lower degree of periodicity than said second voiced class (inherently disclosed by the encoder of Kroon because the encoder of Fig.3 uses both Fixed Code Book (FCB) (unvoiced) (see Fig. 3, element 120) and Adaptive Code Book (ACB) (voiced) (See Fig. 3, element 110). Both, (FCB) and (ACB) got their corresponding gain, which indicate the strength of voiced and unvoiced parts); and

generating a synthesized version of said input speech signal using said plurality of CELP

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coding parameters and said plurality of voicing indexes by said decoder (column 1, lines 43-64 with column 4, lines 49-64 and column 6, lines 2-14).

Regarding **claims 3 and 14**, Kroon discloses a method and encoder wherein at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling an adaptive highpass filter by said decoder (highpass filter; column 4, lines 49-64 and column 27, lines 49-67).

Regarding **claims 4 and 15**, Kroon discloses a method and encoder wherein at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling an adaptive perceptual weighting filter by said decoder (adaptive perceptual weighting filter; column 8, lines 39-54).

Regarding **claims 5 and 16**, Kroon discloses a method and encoder wherein at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling an adaptive Sinc window by said decoder (Sinc; column 20, lines 4-15).

Regarding **claims 6 and 17**, Kroon discloses a method and encoder wherein said enhancing at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling spectrum tilt (spectral envelope tilted; column 17, lines 29-35) of said input speech by short-term enhancement of a fixed-codebook by said decoder (short-term; column 8, lines 31-37).

Regarding **claim 7**, Kroon discloses a method and encoder wherein said enhancing said synthesis of at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling a perceptual weighting filter by said decoder (column 4, lines 49 – column 5, line 8).

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Regarding **claims 8 and 18**, Kroon discloses a method and encoder wherein said enhancing at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling a linear prediction coder by said decoder (LP; column 4, lines 49-64).

Regarding **claims 9 and 19**, Kroon discloses a method and encoder wherein said enhancing said synthesis at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling a pitch enhancement fixed-codebook by said decoder (fixed codebook coupled to a pitch filter; abstract and column 27, lines 11-17).

Regarding **claims 10 and 20**, Kroon discloses a method and encoder wherein said enhancing said synthesis of at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling post pitch enhancement by said decoder (post-filtering; column 27, lines 49-67).

Regarding **claims 34 and 37**, Kroon discloses a method and encoder wherein each of said plurality of voicing indexes has a plurality of bits indicative of a classification of each frame of said plurality of CELP speech frames (column 23, lines 31-59).

Regarding **claims 35 and 38**, Kroon discloses a method and encoder wherein said plurality of bits is three bits (3 bits; column 23, lines 29-33).

Regarding **claims 36 and 39**, Kroon discloses a method and encoder wherein said classification is indicative of periodicity of said input speech signal (periodicity classification; column 30, lines 1-65).

Regarding claims 22, (24, 30), (25, 31), (26, 33), 28, (40, 43), 41, and 44: respective system claims 1, (3,14), (4,15), (5,16), 12, (34,37), (35,38), (36,39) and method claims 22, (24,

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30), (25, 31), (26, 33), 28, (40, 43), 41, and 44 are related as apparatus and the method of using same, with each claimed element's function corresponding to the claimed method step. Accordingly claims 22, (24, 30), (25, 31), (26, 33), 28, (40, 43), 41, and 44 are similarly rejected under the same rationale as applied above with respect to method claims 1, (3,14), (4,15), (5,16), 12, (34,37), (35,38), (36,39).

Regarding **claims 45**, Kroon discloses a method and encoder wherein said periodic index ranges from a low periodic index to a high periodic index (column 30, lines 1-65).

As per **claim 46**, Kroon teaches wherein said plurality of voicing indexes are used in place of pitch gain for post pitch enhancement (Abstract).

As per **claim 47**, Kroon teaches wherein said plurality of voicing indexes are used to control a modification to a low pass filter for said Sinc window (col. 20, lines 4-15).

As per claims 48-49, Kroon teaches wherein each of said plurality of voicing indexes is derived from a normalized pitch correlation parameter R_p , where $-1.0 < R_p < 1.0$, (col. 20, lines 4-15, wherein normalized pitch correlation vectors are used. As per the claimed range, the examiner notes that correlation is statistic representation of how closely two variables co-vary; it can vary from -1 (perfect negative correlation) through 0 (no correlation) to +1 (perfect positive correlation). Therefore, the claimed range is a standard range to be used.).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter

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sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 11, 21, 27 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kroon in view of Morii et al. (PGPUB 2006/0206317), hereinafter referenced as Morii.

Regarding **claims 11, 21**, Kroon discloses a method of improving synthesized speech quality, but does not specifically teach a method and encoder wherein at least one of said plurality of voicing indexes is for use by said decoder to select at least one sub-codebook from a plurality of sub-codebooks.

Morii discloses a method and encoder wherein at least one of said plurality of voicing indexes is for use by said decoder to select at least one sub-codebook from a plurality of sub-codebooks (subcodebooks; column 8, paragraphs 0109-0110 with column 4, paragraphs 0049-0056), to achieve an excellent sound quality at the time of decoding.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Kroon's method and encoder as described above, to correspond to input signals with various characteristics and achieve excellent sound qualities at the time of decoding (abstract).

Regarding claims 27 and 33, system claims 11 and 21 and method claims 27 and 33 are related as apparatus and the method of using same, with each claimed element's function corresponding to the claimed method step. Accordingly claims 27 and 33 are similarly rejected under the same rationale as applied above with respect to method claims 11 and 21.

Conclusion

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Abdelali Serrou whose telephone number is 571-272-7638. The examiner can normally be reached on 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Hudspeth can be reached on 571-272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Abdelali Serrou/
Examiner, Art Unit 2626

/David R Hudspeth/
Supervisory Patent Examiner, Art Unit 2626

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